

ABSTRACT

A microfabricated Bragg waveguide of semiconductor-compatible material having a hollow core and a multilayer dielectric cladding can be fabricated by integrated circuit technologies. The microfabricated Bragg waveguide can comprise a hollow channel waveguide or a hollow fiber. The Bragg fiber can be fabricated by coating a sacrificial mandrel or mold with alternating layers of high- and low-refractive-index dielectric materials and then removing the mandrel or mold to leave a hollow tube with a multilayer dielectric cladding. The Bragg channel waveguide can be fabricated by forming a trench embedded in a substrate and coating the inner wall of the trench with a multilayer dielectric cladding. The thicknesses of the alternating layers can be selected to satisfy the condition for minimum radiation loss of the guided wave.

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